

Department of Earth Sciences and Science Education)
MAJOR PROGRAM CURRICULUM MAP: Earth Sciences (0737) and Geology (0727))

Student Learning Outcome	GES 101	GES 102	GES 103	GES 111	GES 131	GES 303	GES 307	GES 408
Demonstrate knowledge of fundamental concepts and principles of in Earth Sciences and Geology	I	I	I	I	I	R	R	M
Demonstrate ability to work as part of a team and to communicate results						I	R	M
Demonstrate ability to work independently			I			R	R	M
Demonstrate critical thinking skills in environmental and other disciplines of geology	I		I			R	R	M
Demonstrate proficiency in scientific writing			I			R		M
Demonstrate ability to analyze and interpret quantitative data			I				R	M
Demonstrate proficiency in appropriate computer hardware and software in the geological sciences					I	R		M
Demonstrate proficiency in locating and evaluating geological literature						I	R	M
Demonstrate ability to represent geological data			I			R	R	M
Demonstrate ability to collect quality field and laboratory data, including sampling			I				R	M

I = Introduced R = Reinforced M= Mastery Demonstrated !

Data-collection tools

B.S. in Earth Sciences – SLO: Demonstrate ability to work independently:

Assessment Activity: Course exams

>80 %	Exceeding Standard
70 – 79%	Meeting Standard
60 – 69%	Approaching Standard
< 60%	Does Not Meet Standard

Assessment Activity: Laboratory reports

- 1. Does Not Meet Standard** - If any of these errors are committed, the standard is not met:
 - Poorly organized, sloppy handwriting and incomplete laboratory notebook.
 - Lack of cross-referencing between data sets in the laboratory notebook, or a complete table of contents.
 - Student draws no connections between any data within the laboratory notebook.
- 2. Approaching Standard** - All of these must be achieved:
 - Somewhat organized, somewhat neat handwriting or incomplete laboratory notebook.
 - Lack of cross-referencing between data sets in the laboratory notebook, or a complete table of contents.
 - Student draws no connections in the laboratory notebook between individual data and data sets included within the notebook.
- 3. Meeting Standard** - All of these must be achieved:
 - Well- organized, neat and complete laboratory notebook.
 - Cross-referencing between data sets in the laboratory notebook, and a complete table of contents.
 - Student draws some connections in the laboratory notebook between individual data and data sets included within the notebook
- 4. Exceeding Standard** - All of these must be achieved:
 - Well-organized, neat and complete laboratory notebook.
 - Cross-referencing between data sets in the laboratory notebook, and a complete table of contents.
 - Student draws many connections in the laboratory notebook between individual data and data sets included within the notebook.

Assessment Activity: Term papers

1. **Does Not Meet Standard** - If any of these errors are committed, the standard is not met:
 - a. Missed deadlines for paper outline, rough draft or final draft.
 - b. Paper written in violation of guidelines and rules, with plagiarism, improperly cited, or improper use of figures, or with typos in each case.
 - c. Paper does not include any argument from the point of view of the student, based on any information in the paper or otherwise.
2. **Approaching Standard** - All of these must be achieved:
 - a. Missed project deadlines for paper outline, rough draft or final draft.
 - b. Paper written within most guidelines and rules, and without plagiarism. There may be issues with proper citing, proper use of figures, and typos.
 - c. Paper is without a well-developed cogent argument from the point of view of the student.
3. **Meeting Standard** - All of these must be achieved:
 - a. Meets all project deadlines for paper outline, rough draft and final draft.
 - b. Paper written within guidelines and rules, and without plagiarism, properly cited, and proper use of figures, and without typos in each case.
 - c. Paper is without a well-developed cogent argument from the point of view of the student, although there may be some text toward this end.
4. **Exceeding Standard** - All of these must be achieved:
 - a. Meets all project deadlines for paper outline, rough draft and final draft.
 - b. Paper written within guidelines and rules, and without plagiarism, properly cited, and proper use of figures, and without typos in each case.
 - c. Paper proposes a cogent argument from the point of view of the student, using collected data and interpretive information from appropriate sources.

Assessment Activity: Oral presentations

1. **Does Not Meet Standard** - If any of these errors are committed, the standard is not met:
 - a. Failure to describe questions, methods, or significance of results, or to compare interpretations.
 - b. Presentation was inaudible.
 - c. Visual aids sloppy, inaccurate, or otherwise indicative of a lack of careful construction; did not appropriately summarize, make a point, or were not explained to the audience.
 - d. Multiple errors in scientific terms, or errors of fact (e.g., a demonstration of a lack of understanding of material presented).
2. **Approaching Standard** - All of these must be achieved:
 - a. Presentation included a description of the question, methods, significance of results, and any interpretations.
 - b. Presentation was audible, but style was to read much of the presentation verbatim from notes or slides.
 - c. Presentation was audible, but using many inappropriate speech patterns (“like, you know, uh”, etc.).
 - d. Visual aids included questions, methods, data and significance, but presenter failed to actively refer to visuals during much of the presentation
3. **Meeting Standard** - All of these must be achieved:
 - a. An organized presentation with clear direction, relevant content, and completeness in interpretation, and relative ease in presentation without use of inappropriate mannerisms (“like”, “um”, etc.) on too many occasions.
 - b. Proper use of visual aids, including description of aid content, and well-drafted quality, and images properly cited.
 - c. Presentation was audible with few references to notes. Addressed the audience throughout the presentation.
4. **Exceeding Standard** - All of these must be achieved:
 - a. Well organized presentation with clear integration of content, and ease of presenting to the audience, including eye-contact, and lack of inappropriate mannerisms (“like”, “um”, etc.).
 - b. Displayed insight into the interpretations presented and any contradictions in interpretations.
 - c. Visual aids well explained, relevant, properly cited, and well-drafted.
 - d. Explained and expanded on information using their own insight, experience, and/or scientific methods of evaluation.

B.A. in Geology – SLO: Demonstrate ability to work independently:

Assessment Activity: Oral presentations

[Same as above SLO.]

Assessment Activity: Semester-long (term) mapping project

1. **Does Not Meet Standard** - If any of these errors are committed, the standard is not met:
 - a. Incomplete field notebook, notes in need of neatness or organization.
 - b. Incomplete geological map, or inappropriate use of data to construct it.
 - c. Incomplete report that explains field and map data, and/or an absence of data diagrams.
2. **Approaching Standard** - All of these must be achieved:
 - a. Mostly complete field notebook, with organized notes, covering the majority of the field area.
 - b. Mostly complete geological map based on independently-collected data.
 - c. Incomplete report that explains field and map data, and/or lack of diagrams of data.
3. **Meeting Standard** - All of these must be achieved:
 - a. Complete field data and field book, with organized notes, and neatly written notes.
 - b. Complete geological map based on independently-collected data using appropriate methods of construction.
 - c. Complete report that explains field and map data, and use of diagrams of data and description of map units.
4. **Exceeding Standard** - All of these must be achieved:
 - a. Complete field data and field notebook, complete with detailed, neatly organized and penned notes.
 - b. Neat and orderly, and accurate geological map based on individual data collection using appropriate methods and tools.
 - c. Complete report that explains the map information, complete with plotting and evaluation of field data and rock unit descriptions.